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CONSULTATION DRAFT

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PLANNING POLICY GUIDANCE:

PLANNING AND NOISE

This guidance offers advice on how the planning system can be used to reduce the impact of noise on people; particularly when they are in buildings such as the home, educational establishments and hospitals where noise can be very intrusive. The guidance builds on the principles established in Circular 10/73 (Welsh Office Circular 16/73) "Planning and Noise" and describes new mechanisms and guidelines for local planning authorities to adopt. It considers the major transport and industrial sources of noise. It also outlines the relevant considerations to be taken into account by local planning authorities when determining planning applications for development which will either generate noise or result in new development being exposed to existing noise sources.

This guidance supersedes Circular 10/73 (Welsh Office 16/73) and model Planning Conditions numbers 5-10 in Appendix A to DOE/Welsh Office Circular 1/85, all of which are cancelled.

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INTRODUCTION

1. The Government is concerned to reduce the impact of noise on people especially when they are at home, at school or in hospital. This guidance shows how the planning system can help to deliver this aim. It builds upon the principles set out in DOE Circular 10/73 (WO 16/73) "Planning and Noise", which is hereby cancelled. That Circular emphasised the importance of noise as a factor in development control. Some uses (eg for residential purposes) are hard to reconcile with uses which generate high levels of noise. The interaction should be considered in the preparation of development plans and taken into account in development control.

2. The Noise Review Working Party recommended (Report of the Noise Working Party 1990, HMSO, ref no. ISBN 0 11 752343 7) that Circular 10/73 should be revised. This guidance suggests various types of development and use which are susceptible to exposure to noise from transport and other sources. To assist in the appraisal of development proposals of these types the guidance introduces the concept of "noise exposure categories". Four noise exposure categories are recommended, ranging from category A, where noise is unlikely to be a significant factor, to category D where noise is such an important factor that planning permission for an incompatible use should normally be refused in the absence of strong planning reasons to the contrary. Appendix 1 explains the approach in more detail and recommends, in tabular form, a range of noise values for each of the noise exposure categories in respect of the various noise sources.

3. But it will be for local planning authorities to determine what levels of noise they wish to attribute to each of these categories, and to define the type of development to be considered most sensitive to noise, in the light of local circumstances and priorities. These policies should be set out in district local plans or Part II of unitary development plans (UDPs). The Secretary of State considers that housing, hospitals and schools should normally be regarded as "noise-sensitive development"; but planning authorities may wish to include other developments or uses within this definition, depending upon local

circumstances.

4. The following guidance refers primarily to legislation on planning, control of pollution, and environmental protection. It does not deal with the more specialised areas of control such as the Noise at Work Regulations 1989, the purpose of which is to protect people at work from exposure to high levels of noise. Nor does the guidance extend to sound insulation between dwellings which is the province of the Building Regulations for England and Wales. Where these Regulations apply it is not appropriate to use planning legislation to impose other standards.

GENERAL PRINCIPLES

5. The great majority of planning applications where noise is an issue will be those where it is proposed to introduce noise-sensitive development into an area exposed to an existing noise source, eg a main road, railway line, aerodrome, or industrial site or complex. The Town and Country Planning Act 1990 requires planning decisions to be made in accordance with the development plan unless material considerations indicate otherwise (see PPG 1). It is therefore important for plans to contain development control policies to apply in deciding applications which are for development that would cause noise, or that would introduce "noise-sensitive development" into areas exposed to noise from existing development or uses. It will be for planning authorities to translate the guidance in this note into their district local plans or Part II of their UDPs. It is open to them to propose variations from this guidance to take account of local circumstances.

6. Where noise policies apply to the whole of the plan area, this should be indicated on the proposals map in the plan, in the same way as other general policies. Area-specific noise policies will be appropriate in certain circumstances; where they relate to a specific area, that area should be defined in broad, general terms, and its boundary illustrated on the proposals map. As noise configurations may change (eg, in the case of an aerodrome where operational changes may lead to significant variations in the impact of the noise on those living in the area), it will generally be inappropriate to show detailed noise contours or zones on a development plan proposals map.

7. When determining planning applications for development which will be exposed to an existing noise source, local planning authorities should take account both of noise exposure at the time of the application and of any increase that may reasonably be expected in the foreseeable future; for example, noise levels forecast to apply when the existing noise source is used to its full capacity. Planning permission should not be granted on unsubstantiated grounds that excessive noise is likely to reduce at some indeterminate date in the future. However, if firm evidence is produced that the noise will reduce within a reasonable time scale, then permission should not be unreasonably withheld on noise grounds. Where it is appropriate to do so, a condition requiring the noise level emanating from the site to be reduced to a specified value, at a specified monitoring point(s), within a specified time, might secure such a reduction.

8. The guidance explains the issues which should be considered and the methods available for specifying noise limits. It also cites sources of other information. For example, procedures are already well established for assessing the impact of new trunk roads in the urban and rural environment, but it will be appropriate to compare the noise assessments derived from these established methods with assessments derived from the authorities' own noise exposure categories.

9. Article 4(a) of The Town and Country Planning (Applications) Regulations 1988 enables a local planning authority to require from an applicant whatever information it considers necessary to help it determine a planning application. Local planning authorities should therefore not hesitate to require an applicant to include information about the noise impact of a development, or the assessed effect of an existing noise source upon the development proposed.

10. EC Directive 85/337 requires environmental assessment (EA) to be carried out before development consent is granted for certain types of project. It has been implemented for projects that require planning permission by the Town and Country Planning (Assessment of Environmental Effects) Regulations 1988. For a limited number of projects, such as major aerodromes, EA is required in every case; for a wider range of projects, including local roads, other new

aerodromes, industrial estate development, waste disposal and mineral extraction, EA is required if the proposal is likely to have significant environmental effects. Where EA is required, the likely effects of noise will be one of the considerations to be dealt with in the environmental statement prepared by the developer and submitted to the local planning authority with the planning application.

11. The background noise levels in some parts of the suburban or rural environment are very low. The introduction of noisy activities into such quiet areas will be especially disruptive to local residents. Local planning authorities will therefore wish to pay particular attention to any likely increase in the the ambient noise level when determining applications for development.

12. One or more of the following approaches may be appropriate for controlling the source of, or exposure to, the noise:

(a) **engineering:** reduction of noise at source; improving sound insulation of sensitive buildings; screening by purpose built barriers;

(b) **lay-out:** adequate distance between source and noise-sensitive building or area; screening by natural barriers, other buildings, or non-critical rooms in a building;

(c) **administrative:** limiting operating time of source; restricting activities allowed on the site; specifying an acceptable noise limit.

Several of these measures may be incorporated into the design of the development proposal before it is formally submitted for determination, but others may be more appropriate as planning conditions attaching to the planning permission.

13. Where the noise is generated in an open area by activities requiring planning permission (eg a permanent site for clay pigeon shooting), or it is not practical to design a building to contain the noise which is likely to be generated, then it may be appropriate to impose conditions specifying an acceptable noise limit. Advice on the appropriate type of limit; the type of

noise index to use; and the means of monitoring is contained in Appendix 2.

14. It must also be remembered that noise in the open countryside can affect animals. Little is known about this subject except that livestock have been found to show a "startle reflex" (which stimulates production of adrenalin) when exposed to intermittent noise, but they soon appear to become accustomed to the noise. Appendix 5 gives the addresses of English Nature, and the Countryside Council for Wales, where advice can be sought if noisy development is likely to affect certain types of site.

15. The power to impose planning conditions can enable development proposals to receive planning permission when it would otherwise be necessary to refuse it. The courts have held that conditions must be relevant to planning and to the development to be permitted and that they must be reasonable. The Government's policy is that conditions should also be necessary, precise and enforceable. The key test is whether planning permission would have to be refused if the condition were not imposed. If not, then such a condition needs special and precise justification. More detailed advice about planning conditions is given in DOE Circular 1/85 (WO 1/85). Some examples of model conditions are given at Appendix 3, but authorities are reminded that they should have regard to the individual circumstances of each application before imposing a planning condition. In particular, authorities should not use the opportunity presented by an application for minor development to impose conditions on an existing development which already enjoys planning permission.

16. In appropriate circumstances potential developers or operators of a noisy site may enter into a planning obligation under section 106 of the Town and Country Planning Act 1990 (as substituted by section 12 of the Planning and Compensation Act 1991) with the local planning authority. Such an obligation should only be entered into where it is necessary to the granting of permission, relevant to planning, and relevant to the development to be permitted. Unacceptable development should never be permitted because of unrelated benefits offered by the applicant, nor should a development that is otherwise acceptable be refused permission simply because the applicant is unable or unwilling to offer such unrelated benefits. An obligation should not be entered into where

the imposition of a planning condition would serve equally well. Advice on the proper use of planning obligations is given in Circular 16/91 (Welsh Office 53/91).

OTHER STATUTORY CONTROLS

17. The planning system is often the most appropriate mechanism for tackling potential noise problems from the outset. It is the first line of defence. However, its efficacy is dependent upon development control procedures being triggered and cannot therefore usually tackle existing noise problems. These can be tackled by other legislation which should be seen as complementing the planning system in this context.

18. Part III of the Environmental Protection Act 1990 has re-enacted the basic definitions and concept of statutory nuisance - which include noise* - and provides for the serving of noise abatement notices on those responsible. Part III of the Control of Pollution Act 1974 contains powers to control noise from construction sites. It also introduced the concept of Noise Abatement Zones, which provide a more sophisticated means of controlling, and where justified, reducing noise from commercial and industrial premises, particularly in areas of mixed development. Although these powers have been little used in recent years, and have been criticised for their complexities, they remain a potentially useful means of tackling urban noise problems.

19. The operational aspects of the Environmental Protection Act and the Control of Pollution Act are usually in the hands of environmental health officers. They are trained in noise assessment and measurement, and over recent years there has been growing co-operation between them and local planning officers. This co-operation is obviously highly desirable and will be important in the implementation of many of the principles underlying this guidance. A PPG on Planning and Pollution is in preparation.

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* The Act specifically excludes aircraft noise.

NOISE FROM ROAD TRAFFIC

New noise-sensitive development near existing trunk and non-trunk roads

20. When considering potential new development that would be exposed to high levels of road traffic noise, local planning authorities should have regard to the general principles given above, and in particular ascertain future predicted noise levels, eg, over the next 15 years. For some new or improved roads, predictions of the effects of traffic noise on sites proposed for noise-sensitive development will have been prepared by the highway authority for the purpose of "The Noise Insulation Regulations 1975" and "The Noise Insulation Amendment Regulations 1988". For others, the assistance of the highway authority will need to be sought in preparing the necessary predictions in accordance with "Calculation of Road Traffic Noise" (DTp and Welsh Office, 1988).

21. In preparing their local plans or Part II of their UDPs, and in exercising their development control functions, local planning authorities should aim to ensure that, so far as is reasonably practical, new dwellings and other noise-sensitive developments are not sited close to roads with high levels of traffic noise. Use by highway authorities of traffic management schemes and powers in the Heavy Commercial Vehicles (Controls and Regulations) Act 1973 may also be appropriate. Where there are particular constraints on achieving separation of new noise-sensitive developments from high levels of traffic noise, local planning authorities should indicate in their plans the policies they propose to adopt by way of appropriate planning conditions or, possibly, planning obligations. For example, it may be possible to mitigate satisfactorily the effects of the noise by design features such as garages or other structures used as barrier blocks, or by limiting development to sound insulated dwellings or single aspect dwellings with gardens sited furthest away from the noise source.

22. Appropriate noise exposure categories for new dwellings and schools exposed to road traffic noise are given in Appendix 1.

23. The advice given above (and in Appendix 1) is most appropriate for sites where noise from road traffic is significantly lower at night than during the

day. Some sites, such as those adjacent to an industrial area, may be subjected to night-time noise from traffic associated with that area, at a level which is little below the day-time level. These sites warrant particular protection, and noise-sensitive development should not normally be permitted where high levels of noise will continue throughout the night, especially between the hours 23.00 to 07.00 when sleep is most likely to be disturbed.

New Local Highway Authority Roads

24. It is equally important to site new or improved roads where predicted noise levels are acceptable for existing or planned development in areas through which they will pass. It is therefore essential that from the earliest days in the preparation of road schemes, local planning and highway authorities should co-operate closely and, if appropriate, take advice from local environmental health departments. When exercising their statutory powers in relation to roads, it will be important for local planning authorities to assess the increase in noise level and the number of noise-sensitive buildings affected. The recommended exposure categories in Appendix 1 will also need to be kept in mind. The resulting information on likely noise effects should then be assessed by local planning authorities along with all other relevant environmental and economic effects in accordance with the Manual of Environmental Appraisal prepared by the Department of Transport.

NOISE FROM AIRCRAFT

25. In the guidance that follows, "aerodrome" is used in its legal and generic sense to cover all types of landing/take off facility (see glossary).

26. Local planning authorities should liaise closely with aerodrome management with the aim of adopting policies which will benefit people living in the neighbourhood without imposing unreasonable constraints on the operators. Noise abatement measures can go someway to overcome local pressure to restrict the use or expansion of existing aerodromes, or the development of new ones. Measures to reduce the noise affecting adjacent communities may include limiting the times or duration of certain noise producing activities, such as engine testing and use of auxiliary power units (ie electricity generators), particularly at night. In some circumstances provision of a physical means of reducing noise, or planning conditions regulating the siting of particular airport buildings or noise producing activities, may be appropriate. Measures to reduce disturbance over a wide area could include limitation of night flying, operational procedures designed to minimise the noise footprint of take-offs and landings over populated areas, and quotas that allow more movements by quiet aircraft than noisy types.

Development near existing aerodromes

27. Where land is, or is likely to become, subject to significant levels of aircraft noise (see noise exposure categories in Appendix 1) it is important that local planning authorities ensure that it is not used for noise-sensitive development, particularly housing. When considering the exposure to aircraft noise of a proposed development, authorities should not overlook other noise sources such as engine testing. In assessing the extent of these constraints, authorities should have particular regard to the potential for expansion and development at the aerodrome. Liaison with the aerodrome management will be essential.

28. Appropriate noise exposure categories for new dwellings and schools exposed to aircraft noise are given in Appendix 1. Replacement schools, clinics, and other community facilities may be needed to serve the existing population in

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high-noise areas and in these instances expert consideration of sound insulation measures will be necessary. Applications for change of use from residential to a less noise-sensitive use in such areas should be given careful consideration, notwithstanding the fact that this may break the pattern of established land-use policies in the area. Depending on the size and nature of the aerodrome, it may well be appropriate to formulate development control policies for inclusion in the local plan or Part II of the UDP.

Major aerodromes

29. For major aerodromes, NNI contours have been produced for many years to aid development control. As from September 1991, the Department of Transport adopted a new index and they now express these contours in terms of L_{eq} dB(A). General advice on this index can be obtained from:* Department of Transport, CAP 4, 2 Marsham St, London, SW1P 3EB. Technical advice on the index and on production of noise contours can be obtained from: Civil Aviation Authority Directorate of Operational Research and Analysis, ORA5, 45-59 Kingsway, Holborn, London, WC2B 6TE.

30. These contours represent the best average description of exposure to noise generated by the approach and departure of aircraft, taking account of the type of aircraft (ie the mix) and time of day. Depending upon the mix, and other factors, the noise contours may be subject to variation from year to year. It follows that, although some local planning authorities have used published noise contours as a basis for development control policies in their local plans, or Part II of their UDPs, this is not necessarily a suitable means of expressing development control policies.

31. Using the most recent L_{eq} dB(A) figures it should be possible to identify the approximate areas defined by the noise exposure categories. The objective will be to achieve a clear and stable pattern of constraints against which development control policies can be formulated and incorporated in local plans and Part II UDPs. To achieve this end local planning authorities should seek the cooperation of the aerodrome management in arriving at the best available long-term predictions of air traffic and the effect on the L_{eq} contours. Conversely, when forecasts are revised by the aerodrome management it is

imperative that the local planning authorities are consulted and their views taken into account.

32. Beyond the extremities of the published contours, noise will still be audible under the arrival and departure routes. The former are generally predetermined by the orientation of the runway and safety considerations; however, departure routes can usually be chosen to avoid, as far as possible, the most built up areas. (Where appropriate National Air Traffic Services should be consulted). These routes invariably comprise a wide corridor of tracks and local planning authorities may also want to take these into account in developing their long-term planning.

33. Information concerning noise from Heathrow, Gatwick and Stansted airports is available from the Department of Transport (CAP 4, 2 Marsham Street, London SW1) and for most other airports from the appropriate airport management. Where noise contours expressed in L_{eq} dB(A) are not available local authorities should approach the aerodrome management to secure early compilation of contours. It is recommended that L_{eq} dB(A) should be the normal basis for aircraft noise contours.

Small aerodromes

34. The noise exposure categories may be used for assessing proposals for new development around small aerodromes, but local planning authorities should not rely solely on L_{eq} where this is based on less than about 30 movements a day. There is some evidence that at high noise levels, the public perceive noise from general aviation as more disturbing than noise around major commercial airports, and this should be kept in mind. Many small aerodromes are situated in otherwise quiet areas; often on the periphery of towns or villages, or in open countryside. Therefore, if other planning constraints do not militate against new residential development in such areas, housing should be situated so as to avoid being subjected to noise levels above noise exposure category A.

Military aerodromes (including military helicopter landing sites)

35. The noise exposure categories should be used for assessing proposals for new

developments near military aerodromes. As many of these are situated in rural areas, it will often be possible to locate new residential developments in areas where the noise exposure category is "A", while still taking full account of other planning constraints. This option will not apply to proposals for residential development involving extension, conversion or change of use of existing buildings (farm diversification and rural development policies are likely to result in an increase in proposals of this type). When determining such applications local planning authorities should take account of the differences between civil and military operations. Military jet aircraft can generate very high noise levels, particularly during take off, and occasionally the effectiveness of noise abatement flight procedures normally adopted may be limited by operational requirements. Changes in aircraft type and number of movements may also occur over a short period, resulting in unpredictable changes in noise levels.

36. For aerodromes where a Ministry of Defence (MoD) noise insulation grant scheme has been introduced, authorities will already hold an MoD map showing $L_{Aeq,T}$ contours. These are based on a 12 hour period, not a 16 hour period as is used at designated civil aerodromes. Other information and advice may be obtained from Ministry of Defence PL(Lands), Leatherhead Road, Chessington, Surrey, KT9 2LU. Liaison with the aerodrome commander and the MoD Land Agent may also be helpful.

Development of aerodromes

37. When considering proposals for the development of new aerodromes and the expansion of existing ones, due weight should be given to the principles set out in the preceding paragraphs. If the construction of the aerodrome includes a basic runway length of 2100 m, or more, it will fall within Schedule 1 of the Town and Country Planning (Assessment of Environmental Effects) Regulations 1988, with the result that an EA is required. If the construction of the aerodrome does not fall within Schedule 1 it will fall within Schedule 2, which will mean that an EA is required if there are likely to be significant environmental effects. Where a major aerodrome is the subject of a proposal which will effect its capacity, there will be a need to prepare or revise forecast noise contours to estimate the resulting noise climate.

38. The following matters should be considered as they relate to local circumstances:

a. the effect of the proposal on the noise around the aerodrome and the number of people likely to be affected by increased (or reduced) exposure to aircraft noise;

b. the effect of changes to noise abatement flight paths (ie take-of routes designed to minimise noise disturbance to the communities below);

c. any changes in the hours and intensity of operation, significant changes in the types of aircraft using the aerodrome, and the feasibility of using quieter types;

d. the effect of noise from ground operations,(eg. the use of auxiliary power units, test running, additional taxiing), as well as new road proposals and access traffic;

e. arrangements for monitoring compliance with noise restrictions;

f. the inclusion of proposals for mitigating noise from ground operations such as the construction of earth bunds and other types of screen, taxiway restrictions, operational procedures for take-offs and landings, and noise insulation schemes;

g. arrangements for consultation with the public, and for extensions to existing aerodromes, current attitudes about how the aerodrome is being operated;

h. the costs and operational penalties incurred in minimising noise.

Planning conditions

39. Planning conditions limiting the hours of operation, and the numbers and types of aircraft may be applied to the whole aerodrome only where the proposed

development is likely to affect materially the use of the aerodrome; for example, new terminal facilities, a new runway or the lengthening or strengthening of an existing runway. Planning powers are concerned with the use of land. It is therefore not appropriate to seek to impose planning conditions to control the movement of, or noise emitted by, aircraft in flight. Powers are contained in Civil Aviation legislation for control of aircraft noise during landing and taking off.

Helicopters and heliports (excluding military heliports)

40. When determining a planning application for heliport development, local planning authorities will need to assess the existing level of noise disturbance in the area surrounding the site and consider closely the effect of further disturbance resulting from the proposal. The noise expected from the heliport proposal should not be assessed in isolation - account should also be taken of local circumstances and such factors as whether the area is already exposed to noise from fixed wing aircraft. Helicopter noise is perceived by some people to be more intrusive than that created by fixed wing aircraft.

41. Helicopters differ from fixed-wing aircraft in that they do not necessarily follow standard flight paths. Planning applications for helicopter landing/take-off facilities should therefore be accompanied by comprehensive information about the proposed flight paths. Preferably, these paths should have been discussed and agreed in principal with National Air Traffic Services (NATS) beforehand. Where such information does not accompany the application the local planning authority should have no hesitation in requesting it, and in suggesting that the applicant has discussions with NATS. When satisfactory paths have been agreed by all three parties, the local planning authority may wish to incorporate them into a planning obligation; but in doing so must recognise that the practical enforcement will lie with NATS.

42. Extensive use of helicopters has led to movements from the gardens of some private houses and from commercial premises, such as factories, offices and hotels. These movements can cause local annoyance. However, they may often be incidental or ancillary to the principal use of the land and as such would not generally require a separate planning permission.

43. Under part 4, Class B of Schedule 2 to the Town and Country Planning General Development Order 1988, the landing and taking off of helicopters may be a temporary use of land enjoying permitted development rights of up to 28 days in any one calendar year. A local planning authority may make a direction under Article 4 of the GDO, withdrawing these rights and requiring that a planning application be submitted to enable the use to take place. For such a direction to remain in force for more than 6 months, the approval of the Secretary of State for the Environment, or Secretary of State for Wales as appropriate, is necessary. If planning permission is refused, or granted subject to conditions, compensation may be payable. The Government's policy is that permitted development rights should be withdrawn only in exceptional circumstances and that such action will rarely be justified unless there is a real and specific threat to an interest of acknowledged importance. Where there is evidence (such as the number of movements per day, the hours between which movements are likely to be made, and the noise levels) to suggest that temporary use of land by helicopters will subject people living or working nearby to noise levels in noise exposure category "C" or above, it may be appropriate for the local planning authority to consider making a direction.

NOISE FROM RAILWAYS

Development near existing railway lines

44. Railway noise emanates from various sources; for example, operational railway lines (wheel/rail noise and locomotive noise); marshalling operations; and station activities (including announcements). These types of noise can cause considerable local annoyance so local planning authorities should not normally grant planning permission for noise-sensitive development on land subject to high levels of such exposure. Local planning authorities are advised to liaise with environmental health departments and the railway operator to ascertain present levels of noise, and levels likely in the future if there are proposals for intensification.

45. Guidance on acceptable noise levels for dwellings and schools is given in terms of noise exposure categories in Appendix 1.

46. When granting planning permission for development in areas subjected to noise levels in the higher noise exposure categories, authorities should consider the following general advice on layout and design features to minimise the effects of noise and vibration. In general, a minimum distance of 15 m is recommended between buildings and track. The likelihood of significant ground-borne vibration will depend on the nature of the ground and the types of train. Proposals for residential development within 60 m of the track may need to include an assessment of the impact of vibration from the railway, and the possibility of vibration caused by trains running in tunnels should not be overlooked. Where noise levels are high, as with road traffic, intervening buildings or structures, such as garages, may serve as noise barriers. Alternatively development can be limited to sound-insulated or single aspect dwellings with gardens sited furthest away from the noise source.

New or re-aligned railway lines

47. When drawing up proposals for new railway lines, or the re-alignment of existing ones near noise-sensitive development, railway operators should liaise

with local planning authorities and environmental health departments to consider how noise problems can be prevented. In some cases an EA will be required. The Department of Transport expects to consult on draft noise insulation regulations for new railway lines in mid-1992, the aim being to provide equity with "The Noise Insulation Regulations 1975" (as amended) as applied to new roads. Published guidance, in a form similar to "Calculation of Road Traffic Noise" (DTp and Welsh Office, 1988), will be available at the same time.

NOISE FROM INDUSTRIAL AND COMMERCIAL DEVELOPMENTS

Noise-sensitive development near industrial/commercial premises

48. When considering an application for noise-sensitive development in locations which are subject to noise from industrial/commercial premises or other fixed installations, the existing noise climate should be taken into account. If the noise contains a distinguishable discrete, continuous note or tone (whine, hiss, screech, hum, etc), or if there are distinct impulses in the noise (bangs, clicks, clatters, or thumps), or if the noise is irregular enough in character to attract attention it may be less acceptable than a steady noise. This information will be important in judging the acceptability of the sight. However, it should also be borne in mind that whilst sound insulation measures may reduce the noise to acceptable levels inside a building, people may also have a reasonable expectation of peaceful enjoyment of adjacent amenity areas - whether communal grounds or private gardens.

49. When determining a proposal for a noise-sensitive development in these circumstances, if the local planning authority considers that the existing source of noise is likely to be judged a nuisance to future occupiers, and that planning conditions or obligations will not be able to ameliorate the situation, then planning permission should normally be refused. However, there may be some circumstances where there is less certainty about whether the noise will be judged a nuisance. In these cases authorities should bear in mind that if planning permission were granted, and the noise was subsequently considered to amount to a statutory nuisance, then either the local authority or the individual occupants could take action against the noise maker under Part III of the Environmental Protection Act 1990. But it must also be borne in mind that the defence of Best Practical Means will be available to the noise maker if he is operating from industrial, trade, or business premises.

50. There is insufficient information on people's response to industrial noise to give detailed guidance in the form of noise exposure categories as have been recommended in Appendix 1 for transportation noise.

51. It may be possible for the owner of the industrial premises to reduce noise emission by taking noise control measures or by introducing quieter or quicker working methods such as using quieter machinery, changing production processes or rescheduling deliveries. This may be achieved by a private agreement (ie not under section 106 of the Town and Country Planning Act 1990 - as substituted by section 12 of the Planning and Compensation Act 1991) between the owner and the developer. Alternatively, the local authority could use sections 63 and 64 of the Control of Pollution Act 1974 to set up a Noise Abatement Zone around the industrial premises to prevent an increase in noise (section 65); or even to require a reduction under certain circumstances (section 66). However, the owner of the industrial premises would need some incentive to enter a private agreement, and if a Noise Abatement Zone was proposed he would have the right of appeal.

New industrial or commercial development

52. Noise emissions from industrial and commercial developments can often be considerably reduced by careful attention to site layout, sound insulation measures, and choice of plant and noise control procedures. The prevention of intrusive tonal or impulsive noise is particularly important. These measures may also be applicable to ostensibly "quiet developments" such as office blocks, as they may have noisy mechanical ventilation systems. New commerce and industry likely to cause noise annoyance is best sited away from noise-sensitive development, but where this is not possible the planning objective should be to keep increases in ambient noise levels around noise-sensitive development to acceptable levels. Guidance on control of noise from surface mineral workings can be found in MPG XX/1992.

53. The introduction of new noise sources into an area is liable to result in a creeping growth of the ambient noise level and a consequent deterioration in the quality of the environment, even though each of the new noise sources was at a lower level than the ambient noise existing at the time when permission was granted. The problem will be greatest where ambient noise levels are lowest. Local planning authorities should take account of the fact that industrial and commercial development contributes towards the economic prosperity of an area, and a balance must be struck between protecting the environment and protecting

the economy of an area - albeit at the cost of a slight increase in ambient noise levels.

54. The creeping growth of noise levels is one of the problems which Noise Abatement Zones were designed to prevent. In particular, section 67 of the Control of Pollution Act 1974 enables a local authority to determine an acceptable noise emission level for new premises operating in a designated zone. Where it is not practicable to avoid an increase in ambient levels, care should be taken to prevent these levels building-up to an unacceptable noise climate.

55. The likelihood of complaints about noise from new industrial development can be assessed using guidance in BS 4142: 1990 "Method for rating industrial noise affecting mixed residential and industrial areas". Tonal or impulsive characteristics (see paragraph 48) of the noise are likely to increase the likelihood of complaints and this is taken into account by the "rating level" defined in BS 4142: 1990. This "rating level" should be used when stipulating the level of noise that can be permitted. The likelihood of complaints is indicated by the difference between the noise from the new development (expressed in terms of the rating level) and the existing background noise. Complaints are very likely when this difference in levels is greater than 10 dB(A). Since background noise levels vary throughout a 24 hour period it will usually be necessary to assess the acceptability of noise levels for separate periods, eg day and night if the proposed development will generate noise over the full 24 hour period. Similar considerations apply to developments that will emit significant noise at the weekend as well as during the week.

56. At very quiet or noisy sites special consideration will be necessary when using the (rating level - background level) method. At a very quiet site the method may indicate that complaints will occur at a noise level so low that industrial activity is impractical. Therefore, in some cases local circumstances may warrant setting the level at a higher value, say 40 dB(A). At an already noisy site the method may indicate that a very high noise level will be acceptable; an upper limit of say 55 dB(A) may be appropriate here, again depending on local circumstances. It should be remembered that sources that contribute to current high ambient levels may not always do so; they may for example, be replaced by quieter models.

Planning conditions

57. Local planning authorities may wish to consider imposing two types of planning condition. The first sets a noise limit over a given period at the site, or other specified boundary. In some cases, it may be appropriate in addition to set a limit on short-term peaks and this may best be achieved by the use of a short period (eg. a few minutes) $L_{Aeq,T}$. The second type of planning condition specifies the type of activity that may take place and details of the construction and layout of the development. Examples of both types of condition are given in Appendix 3. In deciding whether it is necessary to impose a condition to control noise from a particular development it should be appreciated that even with developments which might be assumed to be quiet - such as offices or warehouses - noise from their ventilation plant etc, or from vehicle movements, may cause problems in residential areas.

58. The first type of condition allows the developer to achieve the required noise level in whatever way he considers the most cost-effective. A further advantage is that it controls noise in the long term since any future changes within the development must be made in such a way that the limits are not exceeded. However, a disadvantage of this type of condition is that, in order to ensure compliance, noise emissions must be monitored. This may be costly and time-consuming, or even impracticable where the noise limit is set near or below the existing background level. On the other hand, compliance with the second type of condition is easier to check and it may prove more effective against certain noise problems. For example, conditions on the location of the access to the development may help to solve the problem of noise in neighbouring residential areas that arises from traffic (particularly heavy vehicles) generated by the development. But control of activity, construction and layout, may prove less effective than noise limits in controlling noise resulting from future changes within the development. In practice, therefore, a combination of both types of condition may prove advantageous. This would entail the developer being given, at an early stage, target boundary noise limits for use in drawing up a scheme of building and operation for the development. If the local planning authority was content that the proposals would satisfy these noise limits the scheme could be incorporated into a planning condition.

59. Where it is difficult to set detailed conditions, authorities may wish to agree planning obligations with developers on the lines described above.

60. Developments such as fast-food restaurants and public houses pose particular difficulties because they close late at night with attendant problems of noise caused by customers and their vehicles in the vicinity. With new developments it may be possible to use the buildings to screen nearby noise-sensitive areas from car-parks. When an existing building is converted fewer options are available. Purpose built noise barriers are unlikely to be very effective because they may need to be impractically high to shield bedroom windows on the first floor of nearby houses. Often, it may be necessary to have recourse to limiting night-time opening hours as the most effective form of control.

61. Applicants should be warned that the granting of planning permission, and compliance with any conditions attached, will not necessarily protect them from legal action, brought by the local authority or private citizens under Part III of the Environmental Protection Act 1990, for creating a statutory noise nuisance.

NOISE FROM CONSTRUCTION AND WASTE DISPOSAL SITES

62. These operations share common features. They are not permanent (although waste disposal sites may be used for several years); the main area of activity moves around the site; much of the noise may be caused by vehicles entering and leaving the site; and the hours of working may be long but variable. They may, however, differ in that waste disposal sites are frequently in rural locations. Noise from mineral extraction sites is dealt with in MPG XX 1992. This section does not, therefore, specifically refer to mineral extraction sites; although some general points made there will be applicable here and vice-versa.

Construction sites

63. Section 60 of the Control of Pollution Act 1974 gives local authorities power to impose requirements on the way in which construction, demolition and certain other specified works are to be carried out for the purpose of minimising noise. Section 61 provides for the builder, if he wishes, to apply for the local authority's consent to his own proposals in advance of the work commencing. In either case, measures to control noise should include: type of plant to be used (in generic terms); hours of working; use of screens; and regulation of site traffic.

64. Daytime noise limits, expressed in terms of $L_{Aeq,T}$, should be flexible because some noisy operations may be less annoying for the people living nearby if they are completed quickly, rather than prolonged by only partially successful noise reduction measures. When night working is unavoidable, effort should be made to minimise the number of vehicles servicing the site between 19.00 and 07.00. During the evening, which should be defined to suit local circumstances, noise levels may need to be as much as 10 dB lower than daytime levels; and to avoid sleep disturbance the night-time level 2 m outside the facade of noise sensitive premises should not exceed an $L_{Aeq,1h}$ of 45 dB.

65. More detailed guidance can be found in BS 5228 "Noise control on construction and open sites"; parts 1-4. In particular, Part 1: 1984, "Code of practice for basic information and procedures for noise control" will be useful because as well as giving general advice it describes a method for predicting

noise from construction sites.

Waste disposal sites

66. Before waste disposal operations can start there must be a valid planning permission (or appropriate Established Use Certificate as defined in section 36(2) of the Environmental Protection Act 1990) for the use of the site, followed by a waste disposal licence. Conditions attached to licences generally set limits to the amount of waste, frequency of deliveries, hours of operation, and screening requirements. These will have indirect effects on the amount of noise generated, but site licence conditions can also relate specifically to noise control in the interests of protecting local amenity. This will be particularly relevant when dealing with sites where the operator is working with the benefit of an Established Use Certificate or a planning permission not subject to a noise condition. Local planning authorities should therefore consult closely with waste regulation authorities at an early stage when considering the need for specific noise controls to be imposed by appropriate conditions in any planning permission or in the subsequent site licence.

67. The main sources of noise will be from vehicular movement, tipping operations, and site plant. Appropriate planning or licensing conditions might therefore relate to hours of working; the number and/or capacity of vehicles using the site and their points of ingress and egress; and the provision of some form of screening. Useful information on predicting the noise will be found in BS 5228: Part 1.

NOISE FROM SPORTING, ENTERTAINMENT AND RECREATIONAL ACTIVITIES

68. These activities can vary greatly in their intensity, duration, and regularity. In some instances (eg pop-concerts) the generation of noise is the primary element of the activity, whilst in others noise is produced but has little to do with the enjoyment of the activity. In either case it may be possible to use an already noisy site, for example, near a main road. When determining planning applications the local planning authority will have to judge how much and how often the noise will be generated and balance the enjoyment of the participants against nuisance to other people.

69. Codes of Practice have been published or are planned on the following relevant subjects: clay pigeon shooting, model aircraft, off-road motor cycle sports, and open-air concerts. The Sports Council has published reports on Providing for Motorsports (1986), and Providing for Motorised Water Sport (1990). PPG 17 gives additional advice on sport and noise. In addition, many of the governing bodies of sport have produced codes of conduct which are used when organising events and these should be consulted when new sites are being selected.

70. Where developments are proposed for indoor or outdoor sports that tend to generate noise, local planning authorities should liaise with the regional office of the Sports Council who may be able to advise on ways of minimising the likely disturbance.

71. Noise from entertainment and recreational activities in buildings such as discotheques can be contained by conditions requiring sound insulation (with measures to provide adequate ventilation with windows closed), and by prescribing the hours of use and setting noise limits during certain hours. Traffic generated by the development and associated car parking can cause disturbance - locating the development well away from noise-sensitive buildings is desirable. Where this is not possible care should be paid to the site layout with the aim of screening noise emanating from the car park and minimising noise break-out from the buildings.

72. Partially open buildings such as stadia may not be in frequent use.

Depending on local circumstances and public opinion, local planning authorities may therefore be content to permit higher noise emission levels than they would from industrial development, subject to a limit on the hours of use, and the noise emissions in unsocial hours, including noise from public address systems.

73. If a noisy activity in the open air is covered by the general permission in Article 3 of the Town and Country Planning General Development Order 1988, it will not be controllable by planning control procedures unless a Direction is made under Article 4 to remove permitted development rights. The activity will, of course, be subject to statutory noise nuisance legislation. It may also be subject to various licensing provisions regarding private or public entertainment. Such events should be adequately advertised by the organiser so that local people are aware of the arrangements. Authorities should liaise with the organisers and with the owners of the land on which the activities will take place, to try to limit the activity and noise within reasonable times and areas, and to draw the organisers' attention to any code of practice on the activity.

MIXED NOISE SOURCES

74. When multiple noise sources are operating simultaneously, the total noise level at a given place will be due to the summation of the noise energy from each source. However, it should be noted that summing energy levels will give a total noise level that is much lower than simply summing the individual dB levels from each source. It is not easy to separate the contributions from individual sources. However, if one noise source is dominant, then the total noise level will be only slightly higher than the contribution from this source alone.

75. When assessing an application for a noise-sensitive development on a site exposed to noise from a mixture of sources (eg road traffic and aircraft) a common-sense approach will be necessary. Where there is a dominant source of noise (eg road traffic) the assessment should be based on this source; where there is no dominant source the assessment should be based on the overall sound level and the noise exposure categories for mixed sources given in Appendix 1. If industrial noise is present, the information given in paragraph 48 will also be relevant.

76. Noise protection measures for the noise-sensitive development will depend on the locations of the noise sources. In some cases orientation and screening by garage blocks may be effective; but where the noise sources surround the development, sound insulation measures for the new development may be the only option.

GLOSSARY

Below are explanations of terms as they are used in the PPG; they are not definitions.

Aircraft noise index: In September 1990 the Department of Transport introduced the index "L_{eq} 16 hour dB(A)" for aircraft noise.

Aerodrome: any area of land or space, whether on the ground or on the roof of a building, affording facilities for the landing and departure of aircraft, including aircraft capable of descending or climbing vertically. This term has been used to avoid confusion between other terms such as airport and airfield.

Ambient noise: totally encompassing noise in a given situation at a given time which is usually composed of noise from many sources near and far.

decibel (dB): the unit of sound level. 0 dB is the threshold of hearing, 140 dB is the threshold of pain. A change of 1dB is detectable only under laboratory conditions. A change of 10 dB corresponds roughly to halving or doubling the loudness of a sound.

dB(A): decibels measured on a sound level meter incorporating a frequency weighting (A weighting) which differentiates between sounds of different frequency (pitch) in a similar way to the human ear. Measurements in dB(A) broadly agree with people's assessment of loudness. The background noise level in a living room may be about 40 dB(A), normal conversation about 60 dB(A), heavy road traffic at 60 m about 80 dB(A), the level near a pneumatic drill about 100 dB(A).

Hertz (Hz): unit of frequency (pitch) of a sound. Formerly called cycles per second.

$L_{A10,T}$: the A weighted level of noise exceeded for 10% of the specified measurement period (T). It gives an indication of the upper limit of fluctuating noise such as that from road traffic. $L_{A10.18h}$ is the arithmetic average of the 18 hourly L_{A10} values from 06.00 to 24.00.

$L_{A90,T}$: the A weighted noise level exceeded for 90% of the specified measurement period (T). Often used to give an indication of background noise level.

$L_{Aeq,T}$: the equivalent continuous sound level - the sound level of a steady sound having the same energy as a fluctuating sound over a specified measuring period T. T may be as short as 1 second when used to describe a single event, or as long 24 hours when used to describe the noise climate at a specified location. $L_{Aeq,T}$ can be measured directly with an integrating sound level meter.

Noise index: a measure of noise over a period of time which takes account of the disturbing qualities of noise and correlates well with average subjective response.

Noise-sensitive development: dwellings, hostels, health buildings, educational establishments, and other similar buildings.

Rating level: the measured noise level of a source with an adjustment for the character of the noise.

R_w (BS 5821): single number rating used to describe the sound insulation of building elements (also see Appendix 4).

NOISE EXPOSURE CATEGORIES

1. When assessing a proposal for a new, noise sensitive, development near a noise source, authorities should determine into which of the following four noise exposure categories the proposal falls:

> noise exposure category A: for proposals in this category noise need not be considered as a determining factor in granting planning permission, although the noise level at the high end of the category should not be regarded as a desirable level;
>
> noise exposure category B: for proposals in this category authorities should increasingly take noise into account when determining planning applications, and require noise control measures;
>
> noise exposure category C: for proposals in this category there should be a strong presumption against granting planning permission. Where it is considered that permission should be given, for example because there are no alternative quieter sites available, conditions should be imposed to ensure an adequate level of insulation against external noise;
>
> noise exposure category D: for proposals in this category planning permission should normally be refused.

2. Recommended limits for each of the noise exposure categories for dwellings and schools exposed to noise from road, air, and rail traffic, and mixed sources are given in this Appendix. The noise exposure categories should not be used for assessing industrial noise because the nature of the noise may necessitate individual assessment. However, at a mixed noise site, when industrial noise is present but not dominant, its contribution should be included in the noise level used to establish the appropriate noise exposure category. Whenever industrial noise is encountered the advice given in paragraph 48 should be considered.

3. Many other types of building, such as offices, contain noise sensitive rooms. However, because of the diverse activities that take place in these buildings it is not feasible to use noise exposure categories which determine the need for sound protection measures for the whole building. Instead, local planning authorities should ensure that sound protection measures are appropriate for the expected use of noise sensitive rooms.

RECOMMENDED NOISE EXPOSURE CATEGORIES FOR NEW DEVELOPMENTS NEAR EXISTING NOISE SOURCES.

4. Traditionally, different indices have been used to describe noise from different sources, and limits have been set over different time periods. This has caused confusion, and a move towards consistency has been made here by expressing all noises in terms of $L_{Aeq,T}$ over the periods 07.00-23.00 or 23.00-07.00.

5. Values in the following Tables refer to noise levels measured at least 10 m away from any buildings and 1.2 m to 1.5 m above the ground. Levels should be rounded to the nearest whole number of decibels. Levels of noise from road and rail traffic are often specified at one metre from a facade, and these facade levels should be assumed to be 3 dB(A) higher than levels measured away from any buildings. For aircraft, noise levels refer to contour values.

NOISE EXPOSURE CATEGORIES FOR DWELLINGS - $L_{Aeq,T}$ dB

	noise exposure category			
noise source	A	B	C	D
road traffic (07.00-23.00)	<55	55-63	63-72	>72
air traffic* (07.00-23.00)	<57	57-66	66-72	>72
rail traffic (07.00-23.00)	<55	55-65	65-74	>74
mixed sources (07.00-23.00)	<55	55-63	63-72	>72
all sources** (23.00-07.00)	<42	42-57	57-66	>66

* These values accord with the contour levels adopted by the Department of Transport.

** "all sources" covers transportation and mixed noise sources.

Developments proposed in areas where any regular noise event exceeds an $L_{Aeq,1s}$ of 82 dB in the night period should be treated as being in noise exposure category C (unless already in category D). Developments proposed in areas that are at the boundary between zones defined by exposure categories B and C should be taken to be in the higher category.

For road traffic noise $L_{Aeq,16h} \sim L_{A10,18h} - 2$ dB

For military aircraft $L_{Aeq,16h} \sim L_{Aeq,12h} - 1$ dB

NOISE EXPOSURE CATEGORIES FOR SCHOOLS - $L_{Aeq,T}$ (T = school-day)

	noise exposure category			
noise source	A	B	C	D
all sources*	<52	52-57	57-71	>71

* For air traffic, local planning authorities should keep in mind the levels recommended for dwellings, and should have regard to the likely pattern of aircraft movements at the aerodrome in question which could cause noise exposure during normal school hours/days to be significantly higher or lower than shown in average noise contours.

APPENDIX 2

SPECIFYING NOISE LIMITS

When specifying an acceptable noise limit the following points should be considered:

(a) **type of limit**. Depending on circumstances, it may be appropriate to set a limit based on either an average level of noise which should not be exceeded in a specified time period, or an increase in noise level with respect to the background level. In either case the limit(s) could be a single value over the relevant period, or different values for, say, day and night. It may be difficult to set an evening value as well because the noise source may not lend itself to fine control. The idea of setting an additional overriding maximum level is often attractive, but may be hard to enforce because of the difficulty of ignoring extraneous noise. In some cases it may be appropriate to set a standard for the sound insulation of a building facade rather than a noise limit at the boundary;

(b) **noise index**. Because noises vary over time and have different characteristics many indices have been developed to describe noise levels. The equivalent noise level over a time period T ($L_{Aeq,T}$) has emerged as the best general purpose index for environmental noise. For road traffic noise $L_{A10,18h}$ is still widely used, and to describe background noise $L_{A90,T}$ is appropriate. To describe the sound insulation of a component of a building envelope (eg a window) R_w (BS 5821) is appropriate; it is more complex to specify the insulation of the whole building envelope because the value depends on the type of noise source and its location. These indices are explained in the Glossary. Additional information may be found in BS 7445: 1991: Description and measurement of environmental noise;

(c) **monitoring point(s)**. Normally the noise limit will be chosen to protect the nearest noise sensitive building. However, this does not mean that the monitoring point must be immediately outside that building. In situations where local noise, such as road traffic, makes monitoring difficult it may be easier to monitor a suitably adjusted level at the boundary of the site instead. This approach requires that the noise level at the boundary monitoring point is a reliable indicator of the level at the building to be protected and this may not be the case if the noise source is mobile.

APPENDIX 3

SUGGESTED PLANNING CONDITIONS

Conditions should be used selectively and only when the local planning authority is satisfied that planning permission should be granted. The examples below cannot cater for all situations and additions may be made. Authorities should follow the guidance given in Department of the Environment/Welsh Office Circular 1/85 "The Use of Conditions in Planning Permissions". Planning departments may need expert advice, usually from Environmental Health departments, when considering the imposition of, and monitoring compliance with, some of these conditions.

Comments in brackets ( ) give additional information and do not form part of the planning condition.

Conditions to minimise the effect of noise on new dwellings etc.

1. Development shall not begin until a scheme for protecting the proposed dwellings from noise from the .... has been submitted to and approved by the local planning authority; all works which form part of the scheme shall be completed before any of the permitted dwellings are occupied.

(Authorities should give applicants guidance on the extent of noise attenuation to be aimed at, within or around the dwellings so as to provide precise guidelines for the scheme to be submitted).

2. The building envelope shall be so constructed as to provide sound attenuation against external noise, not less than ...... dB(A), with windows shut and other means of ventilation provided.

(This condition is appropriate where individual dwellings need to be protected against external noise. The term "building envelope" is intended to include the external windows, doors, walls, and roof, through which noise could enter the building. Other methods of specifying sound insulation are given in BS 5821:

Part 3: 1984, but this is likely to be replaced by a European Standard.)

Conditions restricting use of an aerodrome or part of an aerodrome

3. The total number of movements shall not exceed [ ] per annum.

4. Except in an emergency, movements shall take place only between [hours of day] on [days of week].

5. The [development] hereby permitted shall not be used by any aircraft with an authorised weight exceeding [ ].

or

The total number of movements by aircraft exceeding [ ] maximum all-up weight shall not exceed [ ] in any one calendar year.

(The maximum all-up weight of an aircraft is its weight when fully loaded.)

6. Except in an emergency, the runways shall not be used by [class of aircraft]

(With definition of "class" if necessary.)

7. The total number of "touch and go"* movements shall not exceed [ ] per annum.

8. "Touch and go"* movements shall take place only between [hours of day] on [days of week].

(* "touch and go" refers to a landing immediately followed by a take off).

9. The use of auxiliary power units shall not take place between [hours of day] on [days of week].

("Auxiliary power unit" refers to an electricity generator used to power the aircraft when its engines are not running.)

Restrictions on use of industrial or commercial buildings

10. The building shall be used for .... and for no other purpose (including any other purpose in Class .... of the Schedule to the Town and Country Planning (Use Classes) Order 1987).

Conditions restricting noise emitted from industrial or commercial buildings and sites

11. Before the use commences, the building shall be insulated in accordance with a scheme agreed with the local planning authority in order to secure an acceptable level of noise emanating from the building.

(Authorities using this condition should advise the applicant as to the degree of sound attenuation considered necessary and should satisfy themselves that the scheme will achieve an acceptable noise level).

12. Before the development hereby permitted commences a scheme shall be agreed with the local planning authority which shall specify the provisions to be made for the control of noise emanating from the site.

13. .... [activities] shall not take place anywhere on the site except within .... building(s).

(The Condition should describe precisely the activities to be controlled as well as the particular building(s) in which they are to take place).

14. The building shall be [constructed/adapted] so as to provide sound attenuation against internally generated noise of not less than ..... dB(A), with windows shut and other means of ventilation provided.

(Other methods of specifying sound insulation are given in BS 5821:Part 3: 1984, but this is likely to be replaced by a European Standard.)

15. Noise emitted from the site shall not exceed [A] dB expressed as a [B] minute/hour $L_{Aeq,T}$ between [C] and [C] hours Monday to Friday and [A] dB expressed as a [B] minute/hour $L_{Aeq,T}$ at any other time, as measured on the [D] boundary [boundaries] of the site/at point(s) [E].

Specify: A - noise level
B - period
C - times
D - boundary (boundaries)
E - points

16. No [specified machinery] shall be operated on the premises before [time in the morning] on weekdays and [time in the morning] on Saturdays nor after [time in the evening] on weekdays and [time in the evening] on Saturdays, nor at any time on Sundays or bank holidays.

17. Before [any] [specified] plant and machinery is used on the premises, it shall be [enclosed with sound-insulating material] [and] [mounted in a way which will minimise transmission of structure borne sound] in accordance with a scheme to be agreed with the local planning authority.

(Advice should be appended to the permission indicating the attenuation required.)

18. Notwithstanding the provisions of Article 3 of the Town and Country Planning General Development Order 1988 no further plant or machinery shall be erected on the site under or in accordance with Part 8 of Schedule 2 to that Order without planning permission from the local planning authority.

APPENDIX 4

INSULATION OF BUILDINGS AGAINST EXTERNAL NOISE

1. Noise from outside a building can enter a room through windows, ventilators, walls, roof and doors, although in most cases windows provide the main path.

2. The sound insulation of a window increases with the thickness (or mass) of glass subject to other limiting factors, such as air gaps. Therefore to provide good insulation a window must be fitted with effective seals.

3. Double windows can provide higher levels of sound insulation than single panes, and in general the wider the spacing between the panes the higher the insulation. However, the insulation over a band of frequencies can be seriously reduced by a resonance in the cavity between the panes. The frequency of this resonance is dependent on the cavity width and mass of the panes, and is usually in the range 50 Hz to 300 Hz. This should be considered when specifying windows to provide protection against low frequency noise such as traffic. For example, secondary window systems have a wider cavity (and a lower resonance frequency) than thermal double glazing; the effect of this is that secondary windows provide better insulation than thermal windows against noise with energy at high frequencies, such as electric trains, but are only marginally better against noise with low frequency energy such as that from road traffic (see Table 1). Proprietary systems can be designed to minimise these differences.

4. The sound insulation of a window (and other components of the building envelope) varies with the frequency or pitch of the sound, therefore the overall noise reduction provided by a window will depend, among other factors, on the spectrum of the external noise. Table 1 shows typical reductions in noise level from common sources which would be expected from various types of window systems fitted in brick/block walls in a dwelling. For other buildings such as offices and schools the proportion of glazing to brickwork may be greater and this will result in a lower noise reduction, as will a reduction in the sound absorption (eg furniture) within the room.

Table 1. Typical noise reduction of a dwelling facade wth windows set in a brick/block wall

NOISE SOURCE	DIFFERENCE BETWEEN LEVELS OUTSIDE AND INSIDE dB(A)		
	single glazing	thermal double glazing	secondary glazing
Road Traffic	28	33	34
Civil Aircraft	27	32	35
Military Aircraft	29	35	39
Diesel Train	28	32	35
Electric Train	30	36	41

Note: The values in the Table are the difference between dB(A) levels measured outside and inside typical dwellings; they have not been corrected for reverberation time or window area, and so cannot be compared with values obtained under other conditions. The Table is intended to give an idea of the type of window required for a particular situation.

5. The sound insulation of building elements such as windows is often measured in a laboratory. The insulation is expressed in terms of R_w (BS 5821:1984). This is a single number that describes the insulation over a frequency range of 100 Hz to 3150 Hz. The value allows different products to be compared, but it cannot be used directly to determine the sound insulation that will be achieved when the element is installed in a building.

6. To provide adequate insulation against external noise it is necessary to keep windows closed and therefore alternative methods of providing ventilation and control of summertime temperatures must be considered. Further guidance can be found in BRE Digest 338 "Insulation against external noise".

7. If the walls or roof are constructed from lightweight materials they may allow transmission of significant amounts of sound into the building. This could limit the overall improvement achieved by improving the performance of

other elements such as the windows.

Note: the transmission of airborne and impact noise between new or converted dwellings is controlled under the Building Regulations.

APPENDIX 5

EFFECT OF NOISE ON ANIMALS

When a noise development is proposed near:

- a Site of Special Scientific Interest;
- a national or local nature reserve; or
- any area important for wildlife;

then advice should be sought from:

English Nature,
Northminster House,
Peterborough, PE1 1UA

or from:

The Countryside Council for Wales,
Plan Penrhos,
Bangor,
Gwynedd, LL57 2LQ

APPENDIX 6

STATUTORY INSTRUMENTS

The Noise Insulation Regulations 1975.	(SI 1975: No. 1763)
The Building Regulations 1985.	(SI 1985: No. 1065)
The Town and Country Planning (Use Classes) Order 1987.	(SI 1987: No. 764) (as amended)
The Town and Country Planning (Assessment of Environmental Effects) Regulations 1988.	(SI 1988: No. 1199)
The Noise Insulation (Amendment) Regulations 1988.	(SI 1988: No. 2000)
The Town and Country General Development Order 1988.	(SI 1988: No. 1813) (as amended)
The Noise at Work Regulations 1989	(SI 1989: No. 1790)

BRITISH STANDARDS

BS 4142: 1990, Method for rating industrial noise affecting mixed residential and industrial areas.
BS 5228, Noise control on construction and open sites.
BS 5821: 1984, British Standard methods for rating the sound insulation in buildings and of building elements.
BS 7445: 1991, Description and measurement of environmental noise.